

F-831G  
FEED CENTER

TRANSLATION:

(19) Japanese Patent Office (JP)

(11) Kokai No.: 9[1997]-150,105

(12) Kokai Patent Gazette (A)

(43) Kokai Date: June 10, 1997

EARLY DISCLOSURE  
[Unexamined Patent Application]

(51) Intl. Cl. <sup>6</sup> :	Ident.	Office	FI	Technology
	Code:	Ref.:		Display
				Location
B 05 C 19/06			B 05 C 19/06	
No Examination Requested			No. of Claims: 2 0L (total: 5 pages)	
(21) Application No.:	7[1995]-309,305			
(22) Filing Date of Application:	November 28, 1995			
(71) Applicant:	000229597 Nippon Parkerizing Co., Ltd. 15-1, Nihonbashi 1-chome Chuo-ku, Tokyo			
(72) Inventor:	M. Kumada Ionicks Division Chichibu Onoda Co., Ltd. 2-13-27, Higashikumo Koto-ku, Tokyo			
(72) Inventor:	H. Murai Ionicks Division Chichibu Onoda Co., Ltd. 2-13-27, Higashikumo Koto-ku, Tokyo			
(72) Inventor:	K. Shimizu Excel Kiko Co., Ltd. 2-1-8, Minamisuna, Koto-ku, Tokyo			
(72) Inventor:	Y. Yoshimura Excel Kiko Co., Ltd. 2-1-8, Minamisuna, Koto-ku, Tokyo			
(74) Agent:	M. Soga, Patent Attorney (and 6 other persons)			

(54) [Title of the Invention]

## POWDER COATING FEEDING DEVICE

(57) [Abstract]

PROBLEM TO BE SOLVED: To easily execute a color changeover of a powder coating with a small floor space and a simple structure.

SOLUTION: A supply of the powder coating is executed by inserting a bottom end part 3a of a suction nozzle 3 hung from a ceiling part 2 of the main body frame 1 into an inside of the powder coating in a coating tank 9 by raising the coating tank 9 carried on a vibrating table from a front opening part of a main body frame 1 with an up and down lifter 5. At the time of the color changeover, the inner surface of the suction nozzle 3 is cleaned with an air blow from an inner surface purge nozzle 11 raising an up-and-down frame 5 in a state in which the coating tank 9 is not carried.

### [Scope of the Patent Claim(s)]

[Claim 1] Powder coating feeding device, characterized in that it is provided with:

a main body frame which opens outward at the front for the purpose of receiving a coating tank loaded with a powder coating from the front,

a suction nozzle installed pointing downward on the inside of the top of the foregoing main body frame,

a feeder which is connected to the foregoing suction nozzle for the purpose of feeding the powder coating to a powder coating gun by sucking it up through the bottom end part of the foregoing suction nozzle,

an up-and-down lifter which is placed in a lower section of the foregoing main body frame and raises and lowers the coating tank placed below the foregoing suction nozzle while holding said tank,

an inner surface purge nozzle which is installed pointing upward on the foregoing up-and-down lifter and directly below the foregoing suction nozzle for the purpose of cleaning the inner surface of the foregoing suction nozzle with blown air, and

a dust collector to suck up the dust which floats in the foregoing main body frame;

in that, at the time of feeding the powder coating, the bottom end part of the foregoing suction nozzle is inserted into the powder coating in the coating tank by raising the coating tank with the foregoing up-and-down lifter; and in that, at the time of changing the color, the inner surface of the foregoing suction nozzle is cleaned by the foregoing inner surface purge nozzle by raising the foregoing up-and-down frame without carrying the coating tank.

[Claim 2] Powder coating feeding device as described in Claim 1, characterized in that the aforesaid up-and-down lifter has a vibrating table to hold the coating tank and to vibrate the coating tank.

[Detailed Description of the Invention]

[0001]

[Technical Field of the Invention]

The present invention pertains to a powder coating feeding device which feeds a powder coating to a powder coating gun and, in particular, to a powder coating feeding device in which the color of the powder coating can be changed easily.

[0002]

[Conventional Techniques]

The powder coating process was developed as an environment-friendly pollution-free coating method in that no solvents are used. In this powder coating process, a powder coating sucked from a coating tank via a coating conveying hose is fed to a powder coating gun, sprayed from the powder coating gun onto a workpiece, and allowed to accumulate on the surface of the workpiece.

[0003] A conventional system for changing colors in this powder coating process is shown in Figure 5. Dedicated feeders 53 and 54 are provided separately to coating tanks 51 and 52 for powder coatings of color A and color B, respectively, and a color changer 57 is connected to these feeders 53 and 54 via corresponding coating conveying hoses 55 and 56, respectively. A coating gun 59 is connected to the color changer 57 via a common coating conveying hose 58. Furthermore, both feeders 53 and 54 are connected electrically to a controller (not shown in the figure) via a tank selector 60.

[0004] The purpose of the color changer 57 is to mechanically connect one of the coating conveying hoses 55 and 56 to the common coating conveying hose 58 and the purpose of the tank selector 60 is to electrically connect one of the feeders 53, 54 for coating tank 51 or for coating tank 52 to the controller.

[0005] For example, when carrying out coating of color A, tank selector 60 and color changer 57 are set so as to select feeder 53 and coating conveying hose 55 which correspond to coating tank 51. If feeder 53 is operated in this state, the powder coating of color A in coating tank 51 is fed to coating gun 59 via the color changer 57 and common coating conveying hose 58, then sprayed from the coating gun 59 onto a workpiece.

[0006] On the other hand, when changing the color from color A to color B, the color A powder coating stuck to the common coating conveying hose 58 and coating gun 59 is cleaned off, then tank selector 60 and color changer 57 are reset to select feeder 54 and coating conveying hose 56 which correspond to coating tank 52 of color B, then feeder 54 is operated in this condition by the controller. In this way, the color B powder coating in coating tank 52 is fed to the coating gun 59 via coating conveying hose 56, color changer 57, and

common coating conveying hose 58.

[0007]

[Problems to be Solved by the Invention]

The change in color can be accomplished in this manner, but the number of coating tanks, feeders, and coating conveying hoses must be the same as the number of colors, plus the fact that a color changer and tank selector are needed. In other words, conventional systems take up a lot of floor space, and because the whole color change system tends to become large and complicated, the production costs are increased. The present invention was developed to solve these problems, and is aimed at providing a powder coating feeding device which can easily change the color of a powder coating. Furthermore, the invention is uncomplicated and only takes up a small amount of floor space.

[0008]

[An Approach to Solving the Problems]

The powder coating feeding device of the present invention has a main body frame which opens outward at the front for the purpose of receiving a coating tank loaded with a powder coating from the front, a suction nozzle installed pointing downward on the inside of the top of the main body frame, a feeder which is connected to the suction nozzle for the purpose of feeding the powder coating to a powder coating gun by sucking it up through the bottom end part of the suction nozzle, an up-and-down lifter which is placed in a lower section of the main body frame and raises and lowers the coating tank placed below the suction nozzle while holding said tank, an inner surface purge nozzle which is installed pointing upward on the up-and-down lifter and directly below the suction nozzle for the purpose of cleaning the inner sur-

face of the suction nozzle with blown air, and a dust collector to suck up the  
dust which floats in the main body frame. At the time of feeding the powder  
coating, the bottom end part of the suction nozzle is inserted into the powder  
coating in the coating tank by raising the coating tank with the up-and-down  
lifter. At the time of changing the color, the inner surface of the suction  
nozzle is cleaned with the inner surface purge nozzle by raising the up-and-  
down frame without carrying the coating tank.

[0009] Furthermore, a vibrating table to hold the coating tank and to  
vibrate the coating tank can be installed on the up-and-down lifter.

[0010]

[Embodiment of the Invention]

An embodiment of the present invention will now be described based on the  
attached figures. Figure 1 shows a perspective view of a powder coating feed-  
ing device according to one embodiment of the present invention. The main  
body frame 1 has the approximate shape of a box, and opens outward to the  
front. A total of six suction nozzles 3 are installed on the ceiling part 2  
of the main body frame 1 so as to point vertically downward. These suction  
nozzles 3 are arranged in two rows, three in each row, from the front to the  
back of the main body frame 1, and an opening is formed in the bottom end part  
3a of each suction nozzle 3. The top end part of each suction nozzle 3 is  
connected to a feeder 4 placed on top of the ceiling part 2 of the main body  
frame 1, and moreover connected to a coating gun via a coating conveying hose  
(not illustrated).

[0011] The structure of a powder coating feeding device according to the  
present invention will be described in detail with the use of Figures 2-4. A  
common bed 6 fixed horizontally on an up-and-down lifter 5 is disposed in the

lower section of the main body frame 1, and the common bed 6 is built so as to be freely movable up and down by the up-and-down lifter 5. Two plateveyors 7 are arranged on the common bed 6 in parallel with each other from the front to the back of the main body frame 1, and installed so as to be freely raised and lowered with respect to the common bed 6 by a respective corresponding cylinder 8. A plurality of ball bearings 10 to convey a coating tank 9 is fixed to each plateveyor 7. Moreover, inner surface purge nozzles 11 are provided in the common bed 6, each pointing upward at locations directly below each suction nozzle 3. These inner surface purge nozzles 11 are connected to an air feeding device (not illustrated). In the front section of the common bed 6, a tank stopper 13 is provided, which is moved up and down by a cylinder 12. Moreover, vibrating table 15 is disposed on the common bed 6 via a vibration isolating rubber 14 and a vibrator 16 is attached to the back end of the vibrating table 15.

[0012] The vibrating table 15 is provided with opening parts at locations directly above the ball bearings 10 of each plateveyor 7 and the tank stopper 13, so that the leading ends of the ball bearings 10 and the tank stopper 13 protrude above the vibrating table 15 when they move upward. Openings are also formed in the vibrating table 15 at locations directly above the inner surface purge nozzles 11, so that each inner surface purge nozzle 11 comes close to or into contact with the bottom end part 3a of the corresponding suction nozzle 3 through the opening in the vibrating table 15, or can be inserted in the bottom end part 3a of the suction nozzle 3.

[0013] A dust collector 18 with a wall surface 17 provided with a large number of dust collecting holes is disposed at the rear of the main body frame 1. Furthermore, an operating panel 19 to operate the powder coating feeding

device is provided in an outside section of the main body frame 1.

[0014] The operating of the powder coating feeding device according to this embodiment will now be explained. First, the up-and-down lifter 5 is lowered to the lowest level and the plateveyors 7 are moved upward by extending the cylinders 8 by operation of the operating panel 19. At this point, each ball bearing 10 on the plateveyors 7 protrudes above the vibrating table 15 via the openings of the vibrating table 15. In this condition, the coating tank 9 loaded with a powder coating of the color to be applied is carried in from the front of the main body frame 1 onto the vibrating table 15. The coating tank 9 is carried in smoothly, riding on the ball bearings 10. Furthermore, a corrugated carton containing a coating delivered from a coating manufacturer can also be used as-is as the coating tank 9.

[0015] Next, the plateveyors 7 are lowered by the cylinders 8 until the ball bearings 10 sink below the vibrating table 15, and in this way the coating tank 9 is placed on the vibrating table 15, then the cylinder 12 is extended so the tank stopper 13 protrudes above the vibrating table 15. This can prevent the position of the coating tank 9 from shifting on the vibrating table 15, even if the vibrating table 15 is vibrated by operating the vibrator 16.

[0016] After the coating tank 9 is placed in this way on the vibrating table 15, the up-and-down lifter 5 is raised until the bottom end part 3a of each suction nozzle 3 is inserted in the powder coating in the coating tank 9, as shown by the virtual lines in Figures 2 and 3. In this condition, the vibrator 16 and each feeder 4 are operated, whereby the powder coating in the coating tank 9 is sucked up through the bottom end part 3a of the suction nozzle 3 and fed to coating guns (not illustrated).

[0017] At the time of changing the color of the coating, the up-and-down lifter 5 is lowered to the lowest level and the plateveyors 7 are raised, whereby the coating tank 9 is held on the ball bearings 10 and carried out from the front of the main body frame 1. The up-and-down lifter 5 is then raised to a level such that the coating tank 9 is not placed on the vibrating table 15. Because the inner surface purge nozzles 11 are provided in the common bed 6, each pointing upward at locations directly below each suction nozzle 3, the top end part of the inner surface purge nozzle 11 can be brought into contact with the bottom end part 3a of the respective corresponding suction nozzle 3 by raising the up-and-down lifter 5. If high-pressure air is fed from an air feed device (not illustrated) to each inner surface purge nozzles 11 in this state, the high-pressure air from the inner surface purge nozzles 11 will reach the coating guns (not illustrated) via the suction nozzle 3, feeders 4, and coating conveying hoses (not illustrated), and sprayed out of the coating guns as a jet. This high-pressure air that is supplied will blow away powder coating that is stuck to the interior of the suction nozzles 3, feeders 4, coating conveying hoses, and coating guns. The inner surface purge nozzles 11 can also be arranged so that they can be inserted in the bottom end part 3a of the corresponding suction nozzles 3. Moreover, the high-pressure air can even be fed into the suction nozzle 3 by just bringing the inner surface purge nozzle 11 close to the bottom end part 3a of the corresponding suction nozzle.

[0018] Furthermore, the outside of the suction nozzles 3 is cleaned with blown air simultaneously or almost simultaneously with the blown air from the inner surface purge nozzles 11, while running the dust collector 18 installed at the rear of the main body. At that time, the dust collector 18 is being

operated and hence dust such as the powder coating blown from the outside of the suction nozzles 3 by the blown air and floating in the main body frame 1 is sucked into the dust collector 18 through dust collecting holes in the wall surface 17 at the rear of the main body frame 1, thus preventing any scattering of the dust outside the main body frame 1.

[0019] After cleaning is thus completed, a new coating tank loaded with a powder coating of the color to be applied next is carried inside the main body frame 1, and the above-mentioned coating is carried out.

[0020] As described above, the powder coating feeding device according to the present invention requires no color changer and tank selector, and can easily meet the need for multicolor coating by just exchanging the coating tank for a single powder coating feeding device.

[0021] Furthermore, although six suction nozzles 3 are provided in the above-mentioned embodiment, this is not the only choice; for example, 10 suction nozzles may be installed in accordance with 10 coating guns.

[0022] Moreover, although the conveyance path for the coating tank 9 was formed by raising the plateveyors 7 provided with a plurality of ball bearings 10 by cylinders 8, a belt-like member with a smooth surface can be formed from a resin, a metal, or the like, and this belt-like member can be stuck on the vibrating table 15 along the front-to-back direction with respect to the main body frame 1, and the coating tank 9 can be conveyed by sliding it on the belt-like member. If a belt-like member of this kind is used, the structure of the powder coating feeding device becomes even simpler.

[0023] In the above-mentioned embodiment, the dust collector 18 is installed at the rear of the main body frame 1, but it can also be installed in a side section of the main body frame 1.

**[Brief Description of the Figures]**

[Figure 1] A perspective view which illustrates a powder coating feeding device according to one embodiment of the present invention.

[Figure 2] A side view which illustrates the powder coating feeding device according to said embodiment.

[Figure 3] A front view which illustrates the powder coating feeding device according to said embodiment.

[Figure 4] A top view which illustrates the powder coating feeding device according to said embodiment.

[Figure 5] A diagram which illustrates a conventional color change system.

**[Description of the Symbols]**

(1) main body frame; (2) ceiling part; (3) suction nozzle; (3a) bottom end part; (4) feeder; (5) up-and-down lifter; (11) inner surface purge nozzle; (15) vibrating table; (18) dust collector; and (19) operating panel.

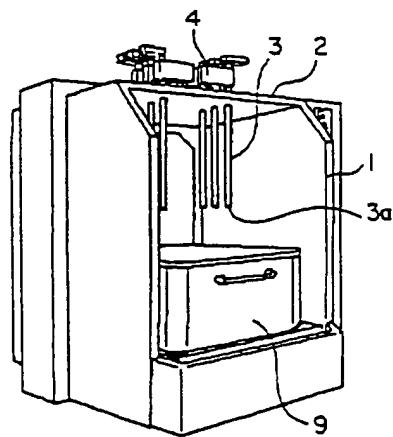


Figure 1.

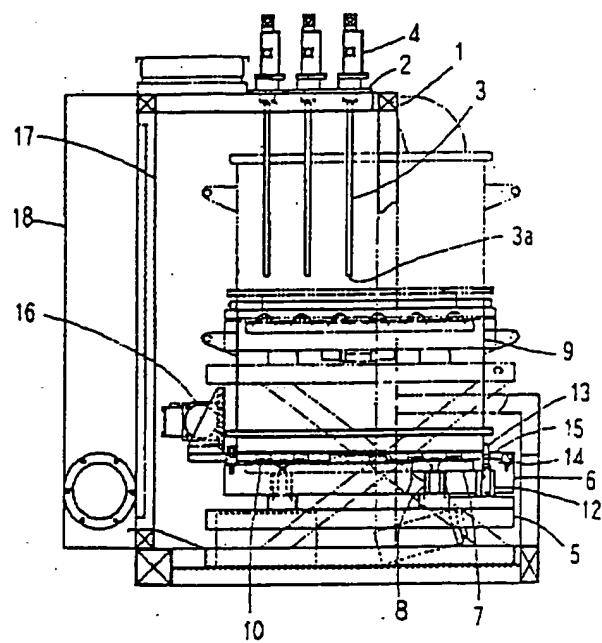


Figure 2.

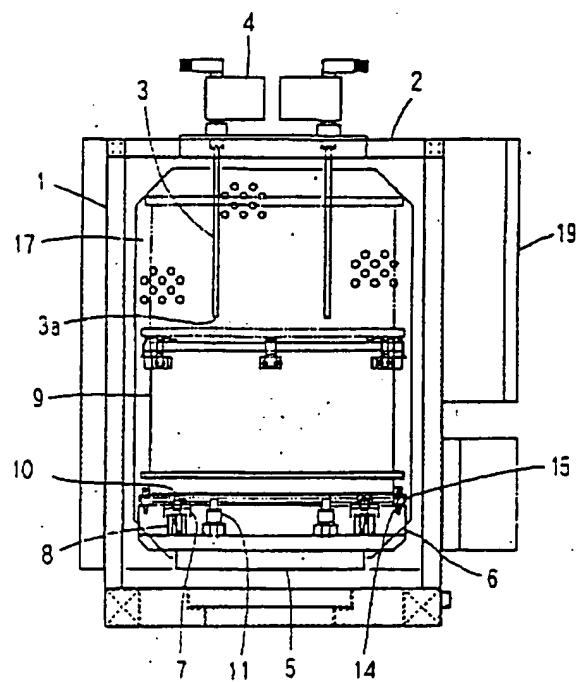


Figure 3.

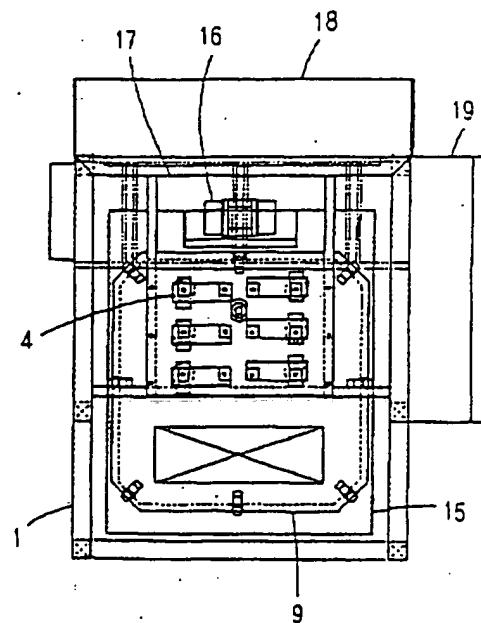


Figure 4.

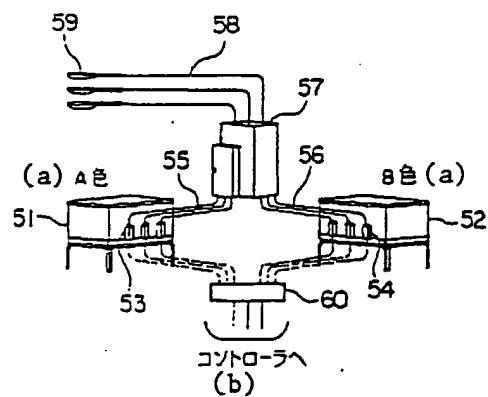


Figure 5. KEY: (a) color; and (b) to the controller.

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : **09-150105**  
 (43)Date of publication of application : **10.06.1997**

(51)Int.CI.

**B05C 19/06**

(21)Application number : **07-309305**  
 (22)Date of filing : **28.11.1995**

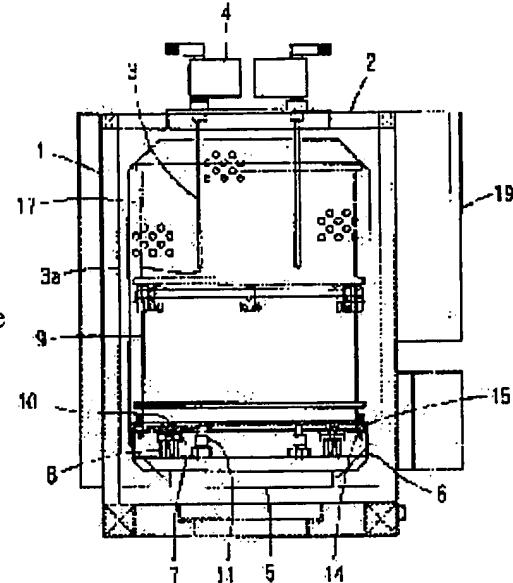
(71)Applicant : **NIPPON PARKERIZING CO LTD**  
 (72)Inventor : **KUMADA MITSUYOSHI  
 MURAI HIROKI  
 SHIMIZU KENJIRO  
 YOSHIMURA YOSHIICHI**

## **(54) POWDER COATING FEEDING DEVICE**

### **(57)Abstract:**

**PROBLEM TO BE SOLVED:** To easily execute a color changeover of a powder coating with a small floor space and a simple structure.

**SOLUTION:** A supply of the powder coating is executed by inserting a bottom end part 3a of a suction nozzle 3 hung from a ceiling part 2 of the main body frame 1 into an inside of the powder coating in a coating tank 9 carried on a vibrating table from a front opening part of a main body frame 1 with an up and down lifter 5. At the time of the color changeover, the inner surface of the suction nozzle 3 is cleaned with an air blow from an inner surface purge nozzle 11 raising an up-and-down frame 5 in a state in which the coating tank 9 is not carried.



## **LEGAL STATUS**

[Date of request for examination]

**10.06.2002**

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of

rejection]

[Date of requesting appeal against examiner's  
decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

(19)日本国特許庁 (JP)

## (12) 公開特許公報 (A)

(11)特許出願公開  
特開平9-1

(43)公開日 平成9年(

(51)Int.Cl.<sup>6</sup>  
B 05 C 19/06

識別記号 執内整理番号

P I  
B 05 C 19/06

審査請求 未請求 請求項の数2 OL

(21)出願番号 特願平7-309305

(22)出願日 平成7年(1995)11月28日

(71)出願人 000229597  
 日本バーカライジング株式会社  
 東京都中央区日本橋1丁目15号

(72)発明者 熊田 光芳  
 東京都江東区東雲2-13-27  
 株式会社アイオニクス事業部

(72)発明者 村井 浩樹  
 東京都江東区東雲2-13-27  
 株式会社アイオニクス事業部

(72)発明者 志水 健次郎  
 東京都江東区南砂2-1-8  
 クセル機工内

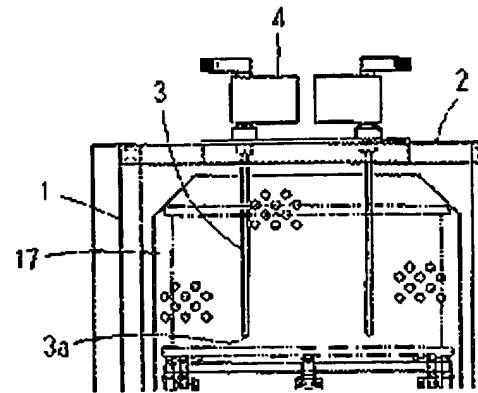
(74)代理人 弁理士 曽我 道昭 (外6名)

(54)【発明の名称】 粉体塗料供給装置

## (57)【要約】

【課題】 この発明は、小さな設置スペース且つ簡単な構造で、容易に粉体塗料の色替えを行うことができる粉体塗料供給装置を提供することを課題とする。

【解決手段】 本体フレーム1の前方開口部から振動テーブル15上に投入された塗料タンク9を昇降リフター5により上昇させることにより本体フレーム1の天井部2から垂下された吸上げノズル3の下端部3aを塗料タンク9の粉体塗料内に差し込んで粉体塗料の供給を行う。色替え時には、塗料タンク9を挿入しない状態で昇



(2) 特開平9-

1

## 【特許請求の範囲】

【請求項1】 前方が外部に向かって開放されると共にその前方から粉体塗料を収容した塗斜タンクを受け入れるための本体フレームと、

前記本体フレームの上部から下方に垂下された吸上げノズルと、

前記吸上げノズルに連結され且つ前記吸上げノズルの下端部から粉体塗斜を吸上げて粉体塗装ガンに供給するための供給機と、

前記本体フレームの下部に配置され且つ外部から前記吸上げノズルの下方に織入された塗料タンクを保持しつつ昇降させる昇降リフターと、

前記昇降リフター上で且つ前記吸上げノズルの直下に上方を向けて配設されると共に前記吸上げノズルの内面をエアブローによりクリーニングするための内面バージノズルと、

前記本体フレーム内に浮遊する粉塵を吸引するための集塵装置とを備え、粉体塗斜の供給時には織入された塗料タンクを前記昇降リフターにより上昇させて前記吸上げノズルの下端部を塗料タンクの粉体塗斜内に差し込み、色替え時には塗料タンクを搬入せずに前記昇降フレームを上昇させて前記内面バージノズルにより前記吸上げノズルの内面をクリーニングすることを特徴とする粉体塗料供給装置。

【請求項2】 前記昇降リフターは、塗料タンクを保持すると共に塗斜タンクを振動させるための振動テーブルを有することを特徴とする請求項1に記載の粉体塗料供給装置。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】この発明は、粉体塗装ガンに粉体塗料を供給する粉体塗斜供給装置に係り、特に粉体塗斜の色替えを容易に行うことができる粉体塗斜供給装置に関する。

## 【0002】

【従来の技術】粉体塗装は、溶剤を使用しないことから環境に優しい無公害型の塗装方法として注目され開発されてきた。この粉体塗装においては、塗料搬送ホースを通して塗料タンクから吸引された粉体塗料が粉体塗装ガンに供給され、粉体塗装ガンから被塗物に吹き付けられ

10

2

トローラが電気的に接続されている。

【0004】カラーチェンジャー57は55及び56のうちの一方を機械的に共一ス58に接続するものであり、タンク・塗斜タンク51の供給機53及び塗斜タ  
機54のうちの一方を電気的にコントロ  
ものである。

【0005】例えば、A色の塗装を行う  
タンク51に対応する供給機53及び塗  
5が選択されるようにタンクセレクタ6  
エンジャー57を設定する。この状態で  
より供給機53を駆動させると、塗斜タ  
色の粉体塗料が塗料搬送ホース55、カ  
ー57及び共通の塗料搬送ホース58を  
59に供給され、塗装ガン59から被塗  
れる。

【0006】一方、A色からB色へ色替  
は、共通の塗斜搬送ホース58及び塗装  
しているA色の粉体塗料を清掃した後、

60及びカラーチェンジャー57を切り  
料タンク52に対応する供給機54及び  
56を選択し、この状態でコントローラ  
4を駆動させる。これにより、塗料タン  
の粉体塗料が塗斜搬送ホース56、カラ  
57及び共通の塗料搬送ホース58を介  
9に供給される。

## 【0007】

【発明が解決しようとする課題】このよ  
を行なうことができるが、色数分の塗斜タ  
び塗斜搬送ホースが必要になる上、カラ  
とタンクセレクタとが必要になるので、1  
全体が大型化且つ複雑化して大きな設置  
ると共に製造コストが高くつくという問  
この発明はこのような問題点を解消する  
もので、小さな設置スペース且つ簡単な  
粉体塗料の色替えを行うことができる粉  
を提供することを目的とする。

## 【0008】

【課題を解決するための手段】この発明  
供給装置は、前方が外部に向かって開放

20

30

40

(3)

特開平9-

3

フレーム内に浮遊する粉塵を吸引するための集塵装置とを備え、粉体塗料の供給時には搬入された塗料タンクを昇降リフターにより上昇させて吸上げノズルの下端部を塗料タンクの粉体塗料内に差し込み、色替え時には塗料タンクを搬入せずに昇降フレームを上昇させて内面バージノズルにより吸上げノズルの内面をクリーニングするものである。

【0009】なお、塗料タンクを保持すると共に塗料タンクを振動させるための振動テーブルを昇降リフターに設けることもできる。

#### 【0010】

【発明の実施の形態】以下、この発明の実施の形態を添付図面に基づいて説明する。図1にこの発明の一実施形態に係る粉体塗料供給装置の斜視図を示す。本体フレーム1はほぼ筐体形状を有しており、その前方が外部に向かって開放されている。本体フレーム1の天井部2には計6本の吸上げノズル3がそれぞれ船直下方に垂下するよう固定されている。これらの吸上げノズル3は、本体フレーム1の前後方向に3本ずつ、2列にわたって配列され、各吸上げノズル3の下端部3aには粉体塗料を吸上げるための開口が形成されている。各吸上げノズル3の上端部は本体フレーム1の天井部2の上部に配置された供給機4に接続され、さらに図示しない塗料搬送ホースを介して塗装ガンに接続されている。

【0011】図2～図4を用いて粉体塗料供給装置の構造を詳細に説明する。本体フレーム1の下部には、昇降リフター5の上に水平に固定されたコモンベット6が配置されており、コモンベット6は昇降リフター5により上下動自在に構成されている。コモンベット6内には、2本のプレートベヤ7が本体フレーム1の前後方向に互いに平行に配列され、それに対応するシリンダ8によりコモンベット6に対して昇降自在に設けられている。各プレートベヤ7には塗料タンク9を搬送するための複数のポールベアリング10が固定されている。また、コモンベット6内には、各吸上げノズル3の直下に位置する箇所にそれぞれ上方を向けて内面バージノズル11が設けられている。これらの内面バージノズル11は図示しないエア供給装置に接続されている。コモンベット6内の前部には、シリンダ12により上下動するタンクストップバ13が設けられている。さらに、コモンベット6

り、塗料タンク9を載せずに昇降リフター5の上に各内面バージノズル11が振動する。昇降リフター5の開口部を通じて対応する吸上げノズル3が近接あるいは当接したり、吸上げノズル3内に挿入し得るようになっている。

【0013】本体フレーム1の後部には、昇降リフター5が形成された壁面17を有する集塵装置18を備えている。また、本体フレーム1の外側部には、塗料供給装置の運転を行うための操作盤19を設けている。

【0014】次に、この実施形態に係る装置の動作について説明する。まず、操作盤19により、昇降リフター5を最下段まで下げ、伸ばしてプレートベヤ7を上昇させる。

プレートベヤ7上の各ポールベアリング10の開口部を介して振動テーブル15を搬入する。この状態で、塗装しようとする色の塗料タンク9を本体フレーム1の振動テーブル15上に搬入する。塗料タンク9は、振動テーブル15の上に乗って滑らかに搬入される。

【0015】次に、ポールベアリング10の下に引っ込むまでシリンダ8に、シリンダ12を降下させて塗料タンク9を振動テーブル15上に搬入する。シリンダ12を伸ばしてシリンダ13を振動テーブル15の上に突出させ、バイブレータ16を駆動して振動テーブル15上で塗料9がずれることを防止される。

【0016】このようにして塗料タンク9を搬入すると、図2及び図3に示すように各吸上げノズル3の下端部3aに粉体塗料内に差し込まれるまで昇降リフター5を駆動させることにより塗料タンク9内に吸上げノズル3の下端部3aから吸上げ、11の内面バージノズル11に搬入される。

【0017】塗装の色替え時には、昇降リフター5を最下段まで下げ、プレートベヤ7を上昇させ、

10

20

30

40

特開平9-

(4)

5

ズル11に供給すると、高圧エアが内面バージノズル1から吸上げノズル3、供給機4及び図示しない塗料搬送ホースを介して図示しない塗装ガンに至り、塗装ガンから外部へ噴出する。この高圧エアの供給によって吸上げノズル3、供給機4、塗料搬送ホース及び塗装ガンの内部に付着していた粉体塗料が吹き飛ばされる。なお、内面バージノズル11を対応する吸上げノズル3の下端部3a内に挿入するようとしてもよい。さらに、内面バージノズル11を対応する吸上げノズル3の下端部3aに近接するだけでも高圧エアを吸上げノズル3内に供給することができる。

【0018】また、内面バージノズル11からのエアブローと同時にあるいは前後して、本体の後部に設けられた集塵装置18を駆動しつつエアブローにより吸上げノズル3の外面をクリーニングする。このとき、集塵装置18が駆動されているので、エアブローにより吸上げノズル3の外面から吹き飛ばされ本体フレーム1内で浮遊する粉体塗料等の粉塵は本体フレーム1後部の壁面17の集塵孔を通って集塵装置18に吸引され、本体フレーム1外部への粉塵の飛散は防止される。

【0019】このようにしてクリーニングを完了した後、次に塗装しようとする色の粉体塗料が収容された新たな塗料タンクを本体フレーム1内に搬入し、上述したように塗装を行う。

【0020】以上説明したように、本願発明に係る粉体塗料供給装置によれば、カラーチェンジャー及びタンクセレクタ等の装置を必要とせず、1台の粉体塗料供給装置に塗料タンクを交換するだけで、容易に多色に対応することが可能となる。

【0021】なお、上記の実施形態では、6本の吸上げノズル3を設けたが、これに限るものではなく、例えば10個の塗装ガンに対応して10本の吸上げノズルを設けてもよい。

\* 【0022】また、複数のポールベアリられたプレートベヤ7をシリンドラ8によく料タンク9の搬送路を形成したが、平滑: 帯状部材を樹脂、金属等から形成し、こ体フレーム1の前後方向に沿って振動テーブに貼設し、帯状部材上を滑らせて塗料タることもできる。このような帯状部材を!に粉体塗料供給装置の構造が簡単になる。

【0023】上記の実施形態では、集塵フレーム1の後部に配設されていたが、の側部等に設けることもできる。

#### 【図面の簡単な説明】

【図1】この発明の一実施形態に係る粉を示す斜視図である。

【図2】実施形態に係る粉体塗料供給装置である。

【図3】実施形態に係る粉体塗料供給装置である。

【図4】実施形態に係る粉体塗料供給装置である。

【図5】従来の色替えシステムを示す図

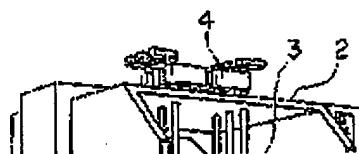
#### 【符号の説明】

- |    |          |
|----|----------|
| 1  | 本体フレーム   |
| 2  | 天井部      |
| 3  | 吸上げノズル   |
| 3a | 下端部      |
| 4  | 供給機      |
| 5  | 昇降リフター   |
| 11 | 内面バージノズル |
| 15 | 振動テーブル   |
| 18 | 集塵装置     |
| 19 | 操作盤      |

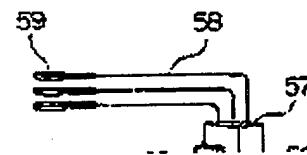
30

\*

【図1】



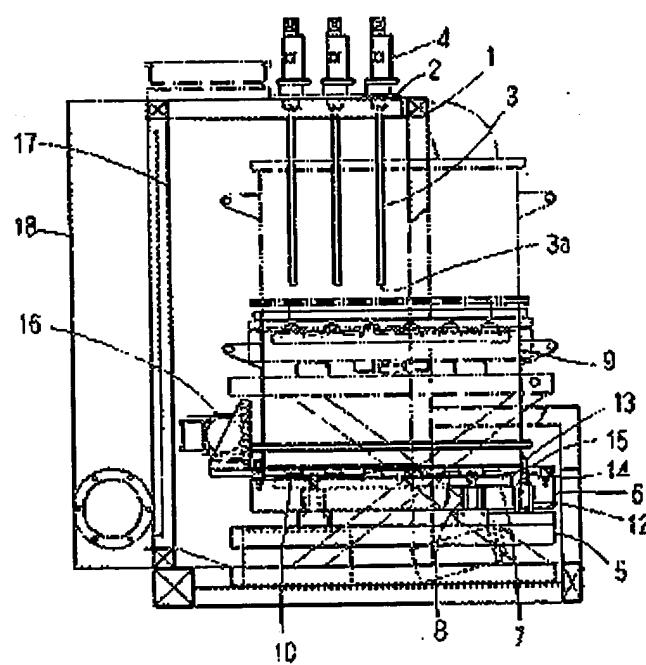
【図5】



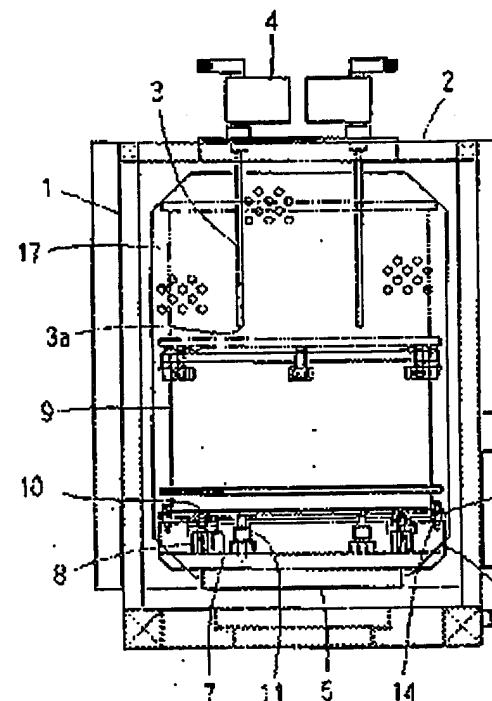
特開平9-

(5)

【図2】



【図3】



【図4】

